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## Symposium: Causal Mechanisms and Process Tracing

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### *Introduction: Mechanisms and Process Tracing*

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There has always been a close association between the empirical method of process tracing and a theoretical interest in causal mechanisms. In their highly influential 2005 book on case-study research, Alexander George and Andrew Bennett refer to process tracing as “an operational procedure for attempting to identify and verify the observable within-case implications of causal mechanisms.”<sup>1</sup> It would probably be fair to say that most methodologists and practitioners of process tracing see the approach largely in these terms: as the search for evidence of the mechanisms that are operating within a case and that generated or contributed to the outcome of interest.

At the same time, there has been substantial ambiguity about what causal mechanisms in fact are. In a survey of social scientific and philosophy of science literatures, James Mahoney identified 24 definitions that differ from one another in crucial respects, including in their positions on: whether mechanisms are composed of intervening variables; whether mechanisms are singular or generally recurring, lawlike relations; whether rational choice is intrinsic to social mechanisms; the level of analysis to which mechanisms apply; whether mechanisms are mere analytical constructs or processes actually existing in space and time; and whether mechanisms are themselves causes or, rather, connect causes to outcomes.<sup>2</sup> It is arguably much harder to be clear about how process tracing itself should be conducted if there is confusion about the nature of one of its key objects of analysis.

In this *QMMR* symposium, four leading qualitative methodologists—Derek Beach, Rosa Runhardt, David Waldner, and Andrew Bennett—advance arguments in response to two questions:

1. How should we conceptualize causal mechanisms for the purposes of empirical social inquiry?
2. How, given this conceptualization, should we undertake process tracing as an approach to causal inference?

In the remainder of this essay, I provide a brief roadmap to the debate that unfolds and point to a set of important questions that the discussion raises. I begin by juxtaposing the arguments advanced by Beach, Runhardt, and Waldner, turning

then to Bennett’s contribution, which critically reflects on two of the other contributions.<sup>3</sup>

To the first question, the authors advance substantially different, if partly overlapping, understandings of causal mechanisms. Beach defines mechanisms as theoretical systems that characterize *entities engaging in activities*.<sup>4</sup> The key theoretical work in characterizing a mechanism, in Beach’s view, lies in establishing *productive continuity*<sup>5</sup> across steps: that is, in stating as precisely as possible how each activity transmits causal force from one entity to another. A key advantage of this understanding of mechanisms, Beach contends, is that it focuses our attention on *how* causal effects were generated and outcomes emerged. Beach sharply contrasts this conceptualization with views of mechanisms as either intervening variables or linked counterfactual causal relations, pointing both to explanatory gaps in and empirical problems with these alternatives.

Waldner, in his contribution, similarly understands mechanisms as generative of outcomes and highlights productive continuity as a desirable feature of causal explanations.<sup>6</sup> Waldner also rejects a rather common view of mechanisms as intervening variables but departs sharply from Beach’s understanding of mechanisms as systems of entities and activities. In Waldner’s view, mechanisms should be understood strictly as those components of our causal explanations that display a particular property: *invariance*. While variables constitute those parts of a causal chain that can be “wiggled,” Waldner holds mechanisms to be those relations or features of phenomena that do not change (and at least under a certain range of changes in context). In an explanation of the forward movement of an automobile, oxygen and fuel in the car’s engine are variables that can be manipulated; combustion, on the other hand, is an invariant process that always occurs under the right conditions and thus constitutes a mechanism. Waldner sees this conception of mechanisms as more fundamental than, but compatible with, a view of mechanisms as counterfactual causes: if mechanisms produce effects, then they are also causes in a counterfactual sense.

Like Beach and Waldner, Runhardt also draws on the concept of productive continuity: mechanistic explanation, she argues, requires a gapless account of how initial conditions lead to outcomes.<sup>7</sup> Unlike Waldner, however, Runhardt understands mechanisms as chains of causation of the form,  $A \rightarrow B \rightarrow C$ . More substantively, Runhardt parts ways with Waldner in arguing that relations of invariance, which may be common in the natural world, will be a much less prominent

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<sup>1</sup> George and Bennett 2005, 138.

<sup>2</sup> See Table 1 in Mahoney 2001.

<sup>3</sup> See Beach 2016, Runhardt 2016, Waldner 2016 and Bennett 2016 in this symposium.

<sup>4</sup> Beach 2016.

<sup>5</sup> The concept is drawn from Machamer, Darden, and Craver 2000.

<sup>6</sup> Waldner 2016.

<sup>7</sup> Runhardt 2016.

feature of social mechanisms. As compared to biological causal processes, for instance, causes in the social world are far harder to conceptualize in ways that lend themselves to lawlike statements about effects; moreover, many chains of social interaction occur only once. At the same time, unlike Beach, Runhardt sees productive continuity as fully consistent with a counterfactual view of mechanisms—a view with direct implications for her methodological advice.

These three authors' differing understandings of mechanisms, in turn, inform their divergent arguments about how process tracing should proceed. Beach, viewing mechanisms as linked chains of entities and activities, contends that process tracing should involve the search for evidence about whether entities in fact engaged in the activities posited in a given theory of mechanism. Runhardt, in contrast, holds that observations of entities engaging in actions consistent with a theory are insufficient to establish a *causal* connection between steps in a process. Rather, drawing on James Woodward's interventionist account of causation,<sup>8</sup> she argues that analysts should seek more direct evidence of causal effects in the form of empirical support for counterfactual claims (a strategy that Beach explicitly argues against). Given the scarcity of regularities in the social world, Runhardt argues, suitable cross-case comparisons for establishing counterfactuals will usually be unavailable. Instead, she contends, analysts should focus their efforts on examining "theoretical interventions" by collecting within-case evidence that is diagnostic of what would have happened had the cause been manipulated.

Waldner advocates an explanatory strategy grounded in his understanding of mechanisms as invariant relations.<sup>9</sup> In particular, he calls on process tracers to empirically construct case-level event histories and to map those histories onto causal graphs crafted from knowledge of invariant mechanistic properties of the world. There is, thus, a similarity between the kinds of data implicated in Waldner- and Beach-style process tracing: both involve a search for evidence of how things unfolded within a case (rather than, as in Runhardt's approach, evidence of what *would* have happened under counterfactual conditions). Yet these two versions of process tracing put evidence of how things happened to very different uses. In Beach's approach, evidence of entities and activities is used to *test* causal theories as explanations of an outcome. In the "scientific solution" that Waldner outlines in his essay, in contrast, we use prior theoretical knowledge of invariant relations as a foundation for drawing case-level causal inferences from the data. Rather than testing general theories, process tracing in this approach *rests* on general claims about the world.

In the symposium's final contribution, Bennett takes a step back to assess the state of the debate over mechanisms and process tracing.<sup>10</sup> He reflects, first, on how his own thinking about the meaning of causal mechanisms has evolved since his early methodological work with George. While George and

Bennett originally drew on Wesley Salmon's work<sup>11</sup> in characterizing mechanisms as processes through which energy, information, or matter are transferred between entities, Bennett has since moved toward a Woodwardian understanding of causation as defined by invariant counterfactual relations, a view that he sees as aligned with Waldner's.

Bennett then turns to an assessment of arguments that Waldner (in this symposium and elsewhere<sup>12</sup>) and Runhardt have advanced about the logic of process tracing. His engagement with Waldner focuses on the "completeness" standard that Waldner has elaborated for judging the adequacy of the causal theories and empirical accounts employed in process tracing. While Bennett concurs on the value of completeness, he calls into question Waldner's claim that the standard provides qualitative researchers with "a much-needed stopping rule" in regard to when sufficient evidence has been collected. In particular, Bennett argues that the standard offers limited guidance insofar as it will rarely be possible to establish comprehensive accounts of invariant social mechanisms. For instance, for many social mechanisms the full set of scope conditions and background assumptions may be impossible to specify, leaving it unclear when an explanation invoking such mechanisms is "complete." (Waldner responds to Bennett's critiques toward the end of his own essay.)

Turning to Runhardt's contribution, Bennett accepts the importance of counterfactual-oriented evidence for evaluating case-level explanations. Yet he sees far wider use of counterfactuals in current process tracing practice than Runhardt acknowledges. Bennett judges the counterfactual evidence in Runhardt's key illustration—Kristen Bakke's study of Chechen insurgency tactics<sup>13</sup>—to be substantially stronger than Runhardt does. He also points to important uses of counterfactual reasoning beyond the establishment of causal effects; counterfactuals can also be used, for instance, to uncover biases in researchers' mechanistic reasoning and to test scholars' degrees of subjective confidence in causal claims.

The essays in this symposium do not resolve the questions of how we ought to define mechanisms or how we should identify their operation within cases. The contributions help advance our understanding of qualitative causal inquiry, however, by (i) crystallizing a set of distinct conceptualizations of causal mechanisms and (ii) deriving from each conceptualization an empirical approach to within-case causal inference. While researchers may continue to understand mechanisms in differing ways, the essays in this collection can help us think more clearly about how to choose a research design conditional on our understanding of causality.

The authors' arguments, moreover, raise a number of important questions about qualitative causal inference that are in need of further examination. To suggest a few: To the extent that counterfactuals are central to process tracing, what counts as valid evidence to support a counterfactual? How far can within-case evidence, as compared to cross-case evidence,

<sup>8</sup> Woodward 2003.

<sup>9</sup> Waldner 2016.

<sup>10</sup> Bennett 2016.

<sup>11</sup> George and Bennett (2005) draw on Salmon (1989).

<sup>12</sup> Waldner 2015.

<sup>13</sup> Bakke 2013.

take us in establishing counterfactual claims? If process tracing hinges on knowledge of invariant mechanistic processes, from where can we draw these prior beliefs? Can the tracing of entities and activities in individual cases serve cumulatively to build this kind of background knowledge? Or does Waldner's theory-driven approach imply that process tracing's inferences must ultimately rest on findings derived from other methods, such as randomized experiments? Must we choose between *using* mechanistic theories (a la Waldner) and *testing* theories (a la Beach)? Or can we do both at the same time, starting out with partial or uncertain knowledge of mechanisms and using process tracing to refine and update these beliefs? Further, the study of mechanisms can be put to different purposes. We might be interested in uncovering mechanisms as a means to identifying unknown causal effects, for instance, or as an explanation of how known causal effects occur. How might our inferential goals have implications for the methods through which mechanisms should be examined?

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## What Are We Actually Tracing? Process Tracing and the Benefits of Conceptualizing Causal Mechanisms as Systems

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### 1. Introduction

Most scholars now agree that process tracing, as a distinct social science method, involves tracing causal mechanisms using in-depth case studies. Studying causal mechanisms shifts the analytical attention from causes and outcomes to the causal process that links causes and outcomes together. However, while they are widely used, statements about causal mechanisms are also the least understood type of causal claim in the social sciences.<sup>1</sup> This short essay discusses two competing approaches to studying causal mechanisms (a counterfactual-based and systems understanding of mechanisms), arguing that adopting a systems understanding of mechanisms results in research designs that produce actual evidence of the process we are attempting to trace instead of hypothetical 'what ifs' or weak comparisons.<sup>2</sup>

Before we proceed, it is important to note that some scholars use the term causal mechanism to refer to a series of events, or a narrative story, prior to the occurrence of an outcome.<sup>3</sup> Describing a series of events can provide a plausible descriptive narrative about *what* happened, but it does not shed light on the causal question of *why* things happened. Other scholars like Abell do go a bit further than just tracing events. Abell contends that when studying causal mechanisms, we need to go beyond tracing events to develop narrative structures with action linkages that build on *subjective* counterfactuals, where we ask actors who participated in a process whether things could have been different at critical junctures of a process.<sup>4</sup> While Abell's suggestion does point us in the direction of moving beyond just tracing events, he then reduces the scope of research questions that we can study to only those that can be assessed by asking actors themselves whether things could have been different. The two approaches to causal mechanisms discussed in this paper go beyond tracing temporal sequences or subjective counterfactuals in their attempts to explain more explicitly why things happen.

### 2. Mechanisms as a series of 'mini'-counterfactuals and problems with the masking of causal logics

Within the social sciences, the most widespread understand-

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<sup>1</sup> E.g. Brady 2008; Gerring 2010; Hedström and Ylikoski 2010; Waldner 2014.

<sup>2</sup> Runhardt 2015; Woodward 2003.

<sup>3</sup> For examples of this understanding, see Abell 2004; Mahoney 2012, 571; Suganami 1996, 164–168.

<sup>4</sup> Abell 2004, 295–296.